

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, D.C. 20554

In the Matter of

*Nationwide Number Portability*

*Numbering Policies for Modern Communications*

WC Docket No. 17-244

WC Docket No. 13-97

**REPLY COMMENTS OF NEUSTAR, INC.**

**I. INTRODUCTION AND SUMMARY**

Consistent with the initial comments filed by Neustar, Inc. (“Neustar”) in this proceeding, most commenters endorse the Commission’s efforts to facilitate Nationwide Number Portability (NNP), acknowledging the public interest benefits that would inevitably result from the ability of a customer to keep his or her telephone number regardless of geographic location.<sup>1</sup> Most commenters also support the transition from the Public Switched Telephone Network (PSTN) to next generation IP networks, citing the completion of this transition as a milestone required to support true NNP.

Non-Geographic Location Routing Number (NGLRN), which is the solution endorsed by Neustar, is the only solution that will help accomplish both these objectives. NGLRN will enable NNP and will provide a viable transition path to IP networks, while coexisting with the PSTN until that transition is complete.

However, to achieve these objectives, the Commission must make NNP a priority and should timely task the Nationwide Number Portability Issues Working Group (NNP WG)

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<sup>1</sup> See *Nationwide Number Portability*, Notice of Proposed Rulemaking and Notice of Inquiry, FCC 17-133, WC Docket No. 17-244, ¶ 2 (rel. Oct. 26, 2017) (“*Notice*”).

established by the North American Numbering Council (NANC) with the responsibility to make actionable recommendations for the adoption of an NNP solution.

While supporting NNP, some commenters appear to misunderstand the effort required to implement the NGLRN solution. Notwithstanding concerns by some commenters otherwise, NGLRN can be implemented without retrofitting legacy TDM networks. Indeed, deployment of this solution will enable providers to integrate seamlessly the PSTN with next generation IP networks and transition expeditiously their customers from PSTN to IP services. Furthermore, NGLRN would advance other policy goals of the Commission, such as accelerating the ability to deploy call authentication services that will help combat illegal robocalls.

Neustar submits its reply comments to address these issues. Neustar's reply comments also describe how, as an option, the industry could choose to provide non-geographic telephone numbers (NGTNs) from the new non-geographic area code to consumers as a way of relieving demand on geographic numbers and further modernizing number administration.

**II. THE COMMISSION SHOULD MAKE NNP A PRIORITY AND SHOULD TIMELY TASK THE NANC'S NNP WG WITH RESPONSIBILITY FOR DEVELOPING ACTIONABLE RECOMMENDATIONS FOR THE ADOPTION OF AN NNP SOLUTION**

Commenters generally acknowledge that NNP offers a host of consumer benefits, including enhancing competition<sup>2</sup> and improving network efficiencies.<sup>3</sup> However, Neustar

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<sup>2</sup> Comments of CenturyLink, WC Docket Nos. 17-244, 13-97, at 9 (filed Dec. 27, 2017) (CenturyLink Comments); Comments of AT&T, WC Docket Nos. 17-244, 13-97, at 1 (filed Dec. 27, 2017) (AT&T Comments); Comments of CTIA, WC Docket Nos. 17-244, 13-97, at 1-2 (filed Dec. 27, 2017) (CTIA Comments); Comments of Competitive Carrier Association, WC Docket Nos. 17-244, 13-97, at 1 (filed Dec. 27, 2017) (CCA Comments) ("NNP allows consumers to retain their mobile telephone number regardless of whether they move geographically or switch service providers, making it a critical competitive issue for the modern mobile market").

<sup>3</sup> Comments of Comcast Corporation, WC Docket Nos. 17-244, 13-97, at 1 (filed Dec. 27, 2017) (Comcast Comments); Comments of the Voice on the Net Coalition, WC Docket Nos.

agrees with Comcast that these benefits are unlikely to be realized unless the NANC’s NNP WG assumes a leadership role in identifying and developing a “comprehensive plan” for NNP implementation.<sup>4</sup>

One of the first responsibilities of the NNP WG should be to propose an appropriate definition of NNP. As noted in its initial comments, Neustar supports the following definition – NNP is the ability to port a geographic telephone number (TN) to an address that is not restricted to the geography of the porting TN. Adoption of this definition, which should not be particularly controversial, would help eliminate some of the apparent confusion associated with other alternatives on which the Commission has sought comment.

For example, some commenters support the use of commercial agreements to implement NNP.<sup>5</sup> While commercial agreements serve an important function in facilitating NNP implementation, they will not result in – and cannot be considered a viable solution for – true NNP.<sup>6</sup> Adopting an appropriate NNP definition would allow the NNP WG and the industry to

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*(footnote cont’d.)*

17-244, 13-97, at 3 (filed Dec. 27, 2017) (“untying consumers from their original rate centers will improve stability by slowing number exhaust”).

<sup>4</sup> Comcast Comments at 2; *see also* CCA Comments at 5-6 (supporting efforts by the NNP WG “to further industry conversations about potential solutions to achieving NNP”).

<sup>5</sup> CenturyLink Comments at 9 (commercial agreements “would enable regional wireless providers to establish points of presence in rate centers outside of their territory to enable porting or permanent roaming and help level the competitive playing field between them and their nationwide peers ...”); AT&T Comments at 6-7 (until the IP transition is complete, “commercial agreements would allow providers to port-in numbers from geographic areas where they have no presence ...”); Comments of NTCA–The Rural Broadband Association, WC Docket Nos. 17-244, 13-97, at 3 (filed Dec. 27, 2017) (NCTA Comments) (noting that commercial agreements offer “the least complicated, least time-consuming, and least disruptive means of allowing those that want to provide NNP capability to consumers the ability to do so”).

<sup>6</sup> CCA Comments at 5 (noting the “near-term” benefits of commercial agreements but observing that “to truly achieve NNP, the FCC and industry must identify longer-term, nationwide solutions to further consumer choice and competition in the market”); Comments of INCOMPAS, WC Docket Nos. 17-244, 13-97, at 5 (filed Dec. 27, 2017) (noting that commercial agreements are “only a stop-gap measure”); NCTA Comments at 9, n.15 (“To be clear,

focus their collective energies on technical solutions that will achieve rather than merely simulate the benefits of NNP.

### **III. THE NGLRN SOLUTION PROVIDES A METHOD TO INTEGRATE SEAMLESSLY THE PSTN AND NEXT GENERATION IP NETWORKS**

Concerns by some commenters about the need to retrofit TDM networks to accommodate NGLRN are misplaced.<sup>7</sup> Because it provides a method for TDM technology to coexist and seamlessly interoperate with next generation IP networks, the NGLRN solution does not require modifications to legacy networks to function.<sup>8</sup> Indeed, NGLRN would help support both NNP implementation and the IP transition – goals endorsed by many commenters.<sup>9</sup>

#### **A. Overview of the NGLRN Solution**

The NGLRN solution has three main components: (1) a new non-geographic area code to provide NGLRNs; (2) a new number administration system for the non-geographic area code;

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commercial agreements as proposed herein are not a perfect solution; they are merely the most straight-forward option available to the Commission to encourage carriers interested in doing so to adopt NNP as a service *today*”) (emphasis in original).

<sup>7</sup> See, e.g., AT&T Comments at 6 (arguing that one of the “hurdles” to the NGLRN solution is the “inability to upgrade switches to accommodate ports from outside the LATA and route calls outside the LATA without an IXC”); CenturyLink Comments at 5 (asserting that its 3,500 legacy TDM switches across its incumbent territory “would need to be equipped to properly rate and route calls in an NNP environment”); Comments of Cincinnati Bell Telephone Company LLC, WC Docket Nos. 17-244, 13-97, at 6 (filed Dec. 27, 2017) (insisting that the NGLRN solution would be “extremely costly” and that “many of the costs incurred by companies would be related to upgrading legacy systems”).

<sup>8</sup> Although many telecommunications networks have transitioned from TDM to IP technology, TDM infrastructure exists and likely will continue to exist for the foreseeable future. For example, some rural service providers operate TDM networks, and many LATA tandems in both rural and nonrural areas employ TDM technology. The NGLRN solution readily accommodates this network reality.

<sup>9</sup> See, e.g., CenturyLink Comments at 8-10; Comcast Comments at 1-2; *see also* CTIA Comments at 2 (supporting “number portability policies that enable consumers to keep their telephone numbers when switching between voice service providers”); Comments of ITTA – The Voice of America’s Broadband Providers, WC Docket Nos. 17-244, 13-97, at 4 (filed Dec. 27, 2017) (endorsing the Commission’s efforts “to encourage the transition to IP-based networks”).

and (3) IP switches, called Non-Geographic Gateways (NGGWs), that host NGLRNs and provide interconnection with the PSTN and among service providers operating next generation IP networks. Neustar addresses the interplay of each of these components below.

To summarize the NGLRN solution, it enables NNP for geographic telephone numbers (TNs) by porting a TN to an NGLRN, rather than to a traditional LRN. TNs are ported to NGLRNs in their current regional NPAC, *i.e.*, service providers receive TN-to-NGLRN updates via their existing NPAC interface. When a service provider performs an LNP query on the TN, the NGLRN is returned. A new number administration system will associate the NGLRN with an Internet address that identifies the specific NGGW provider. Calls on the PSTN that receive an NGLRN from an LNP query route the call via native switch translation mechanisms to an IP network for further call processing.<sup>10</sup> Once the call is on the IP network (or if it originates on an IP network), it will query the NGLRN to obtain the address of the NGGW, which will route the call to the terminating switch.<sup>11</sup>

**B. An NNP TN Will be Ported in its Existing Regional NPAC**

There are seven regional NPACs that support seven unique regions, which are divided by the geography associated with the TN. For example, a New York TN is always ported in the Northeast regional NPAC, while a Florida TN is always ported in the Southeast regional NPAC.

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<sup>10</sup> Switch translations are programs that analyze call information, such as dialed digits, and make call processing decisions. The most basic translation is how to process an area code, which is existing functionality in all TDM switches.

<sup>11</sup> Performing multiple queries for a single call is common in today's IP networks, which rely on queries for most aspects of call processing. For example, the STIR/SHAKEN protocol will add at least two queries to every call; one to obtain the credential at the originating end, and one to verify the credential at the terminating end. Such queries are not considered a burden on the network, but rather constitute a basic part of IP call processing.

Despite claims by some commenters otherwise, the NGLRN solution does not require that a network operator connect to all seven regional NPACs.<sup>12</sup> Rather, with NGLRN, TNs will remain in the NPAC region originally associated with the geography of the TN, regardless of where the consumer may be moving.<sup>13</sup> Thus, to enable NNP for a New York customer moving to Florida, the customer's TN would be ported to an NGLRN in the Northeast regional NPAC and not to the Southeast regional NPAC.<sup>14</sup> By maintaining the consistency of the NPAC regions, the NGLRN solution allows network operators to continue servicing TNs as they do today and avoids the complexity of tracking a TN across multiple regions.

**C. The New Administration System Will Allocate NGLRNs to NGGW Providers**

NGGW providers will acquire NGLRNs from the new administration system, which will administer NGLRNs in the new non-geographic area code. An NGGW provider will furnish the administrator with an Internet address, such as a URI, that will be the address of the specific NGGW. For example, service provider A may provide the URI nggw.spa.com for its NGLRN, and service provider B may provide nggw.spb.com for its NGLRN. The Internet address identifies a specific NGGW, just like an LRN identifies a specific switch. In addition to allocating NGLRNs, the administration system provides routing information for the NGLRNs to other service providers. Service providers routing calls to an NGLRN on an IP network will

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<sup>12</sup> See, e.g., CenturyLink Comments at 6 (asserting that “all switches will need access to all seven (7) NPAC regions to perform the necessary queries ...”).

<sup>13</sup> A service provider that connects to only one NPAC region relies on another service provider (s) to process calls by its customers to TNs in other NPAC regions. Porting NNP TNs in the home NPAC region will retain this model.

<sup>14</sup> The NGLRNs would need to be added to the NPACs. In addition, the same NGLRN would need to be able to be added to multiple NPAC regions, which would only require minor software modifications to the NPACs.

perform a query on the NGLRN and receive the Internet address for routing purposes, and the NGGW will then connect the call to the terminating switch.

**D. NGGWs Will Provide Network Access Via IP**

Interconnection to NGGWs will only be via IP. However, this does not mean that a service provider must transition its network to IP to offer NNP via the NGLRN solution, as some commenters erroneously suggest.<sup>15</sup> Rather, in enabling NNP, a service provider could choose to deploy its own NGGW or could contract with another NGGW provider to provide this functionality.<sup>16</sup>

In either case, the NGLRN solution accommodates those service providers continuing to utilize TDM technology in their networks while facilitating the IP transition. Service providers will use NGLRNs to port their customers' TNs from their PSTN network to their IP network or the IP network of other operators. Once on a next generation IP network, customers will enjoy the benefits of NNP and, in the future, enhanced services such as call authentication via STIR and SHAKEN technologies. With the migration of customers from TDM infrastructure to IP networks, the legacy TDM infrastructure could be retired more quickly, which would put the PSTN one step closer to being completely replaced by IP networks.

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<sup>15</sup> See, e.g., AT&T Comments at 6 (arguing that NNP should “coincide[] with the transition to all IP networks”); Comments of Verizon, WC Docket Nos. 17-244, 13-97, at 6 (filed Dec. 27, 2017) (asserting that “the far better alternative is to undertake the substantial work necessary to incorporate nationwide number portability into the IP transition”).

<sup>16</sup> Neustar does not believe that NGGW providers should be mandated by regulation to offer service to other providers. Rather, Neustar envisions that NGGW service will be available on a competitive basis, with network operators electing to provide NGGW service themselves or to obtain the service from third parties.

#### **IV. THE NGLRN SOLUTION GIVES THE INDUSTRY THE OPTION TO OFFER NGTNS TO CONSUMERS, WHICH WOULD FURTHER MODERNIZE NUMBER ADMINISTRATION**

While not necessary to deploy NNP for geographic numbers, the NGLRN solution gives the industry the option to offer customers non-geographic telephone numbers (NGTNs) from the new non-geographic area code. Although an area code has approximately eight million telephone numbers, NGLRNs likely will only require hundreds, maybe thousands, of numbers within that area code because they are used merely to identify an interface to an NGGW rather than being assigned to each individual customer. The industry could offer the remaining NGLRNs within the area code to consumers, who today lack the option to choose a non-geographic number for their voice and text services. Offering consumers NGTNs could relieve demand for geographic numbers and extend the life of some area codes.

Administration of NGTNs also would provide the industry a platform to modernize and create more efficient number administration. For example, NGTNs would not be allocated in blocks; rather they would be allocated as individual numbers or a range of numbers providing more efficient utilization. Consumers could choose their numbers much like toll free numbers. Portability for NGTNs would be handled through the same administration process for allocating NGTNs and NGLRNs, which would simply require changing service provider and routing information related to the NGTN. This new administration process will replace the legacy number administration processes – NANPA, PA, LERG, LNPA – that are ill-suited to an all IP world.



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Respectfully submitted,

By: /s/ *Tom McGarry*

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